Solving Transportation Problem

Mini Project Presentation

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Introduction

Transportation is an important part of how we get products from one place to another in business. The transportation problem is when we need to figure out how to transport goods to customers while keeping costs low and meeting the needs of both the customers and the suppliers. This problem is important because it affects how well a business can run and how much money it can make. By solving this problem, businesses can figure out the best way to transport goods, save money, and be successful. Understanding and solving the transportation problem is important for businesses to stay competitive and successful.

Objective

The objective of the transportation problem is to find the most cost-effective way to transport goods from suppliers to customers, while meeting the demand at each destination and the supply at each source. Specifically, the goal is to minimize the total transportation cost, which includes the cost of shipping and handling, while ensuring that all customer demand and supplier supply requirements are met. The transportation problem seeks to optimize the allocation of shipments and the assignment of routes to achieve this objective.

Problem Statement

- The transportation problem is an optimization problem that finds the best shipping schedule for moving goods from suppliers to customers.
- There are multiple suppliers and customers, each with a fixed supply or demand of goods.
- Shipping costs are fixed and known for each possible route between suppliers and customers.
- The aim is to minimize the total transportation cost while meeting the demand of each customer and the supply of each supplier.
- The problem involves finding the best allocation of shipments and route assignments while satisfying the total supply and demand constraints.

Methodology

- The methodology used to solve the transportation problem involves representing the problem using Graph ADT with nodes as the locations/places that have the transportation problem, and edges as the distances in kilometers/routes between the places.
- Dijkstra's algorithm is used to find the shortest path between each source and destination location and determine the optimal route for transporting goods from suppliers to customers.
- The algorithm calculates the minimum distance between each pair of nodes in the graph, considering the cost of transportation and the constraints of supply and demand.
- By finding the shortest paths, the optimal allocation of shipments and route assignments can be determined to minimize the total transportation cost while satisfying the demand of each customer and the supply of each supplier.

Solution

- The optimal solution of the transportation problem involves finding the shortest route between different locations/places.
- We can use Graph ADT with nodes representing different locations or places that have a transportation problem and edges representing the distance in kilometers or routes between them.
- By applying Dijkstra's algorithm, we can find the shortest path or optimal route between different nodes or locations and display it using Graph ADT.
- The optimal solution obtained will provide the total transportation distance between two places, which can be used to minimize the transportation cost while meeting the demand and supply constraints.
- By optimizing the transportation routes and distances between different locations or places, we can improve the efficiency and cost-effectiveness of the transportation system in supply chain management.

Conclusion

Transportation is important for businesses to move products from one place to another. The transportation problem is when businesses need to find the best way to transport goods to customers while keeping costs low and meeting their needs. Solving this problem is important because it can help businesses save money and be successful.

To solve the transportation problem, businesses need to find the most cost-effective way to transport goods while meeting demand and supply requirements. This involves finding the best allocation of shipments and route assignments. The problem can be solved using Graph ADT and Dijkstra's algorithm to find the shortest path between each source and destination location.

By optimizing the transportation routes and distances between different locations, businesses can improve efficiency and save costs. In the future, researchers can further explore different optimization techniques and algorithms to solve more complex transportation problems. Understanding and solving the transportation problem is important for businesses to stay competitive and successful in the global marketplace.

References

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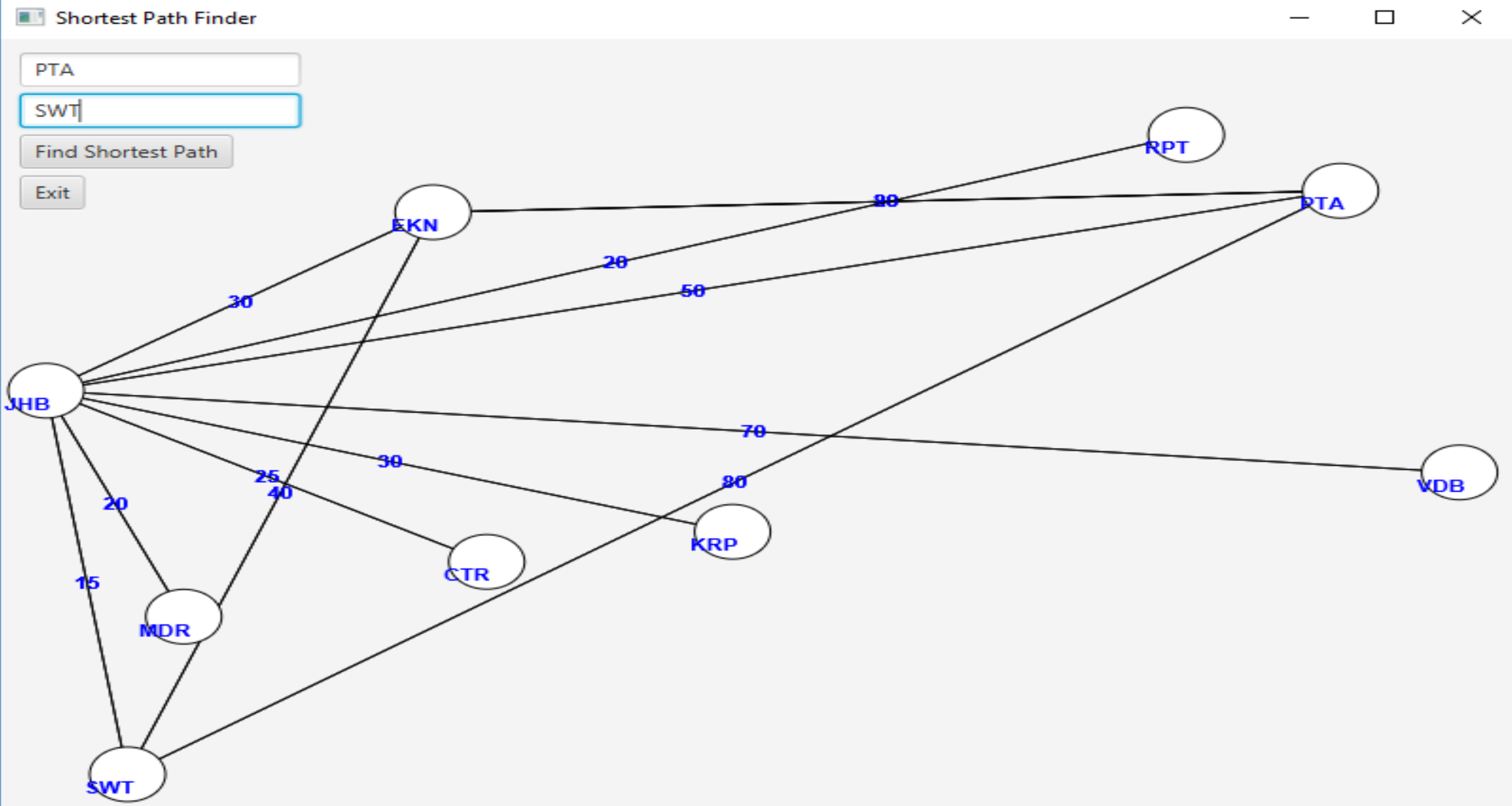
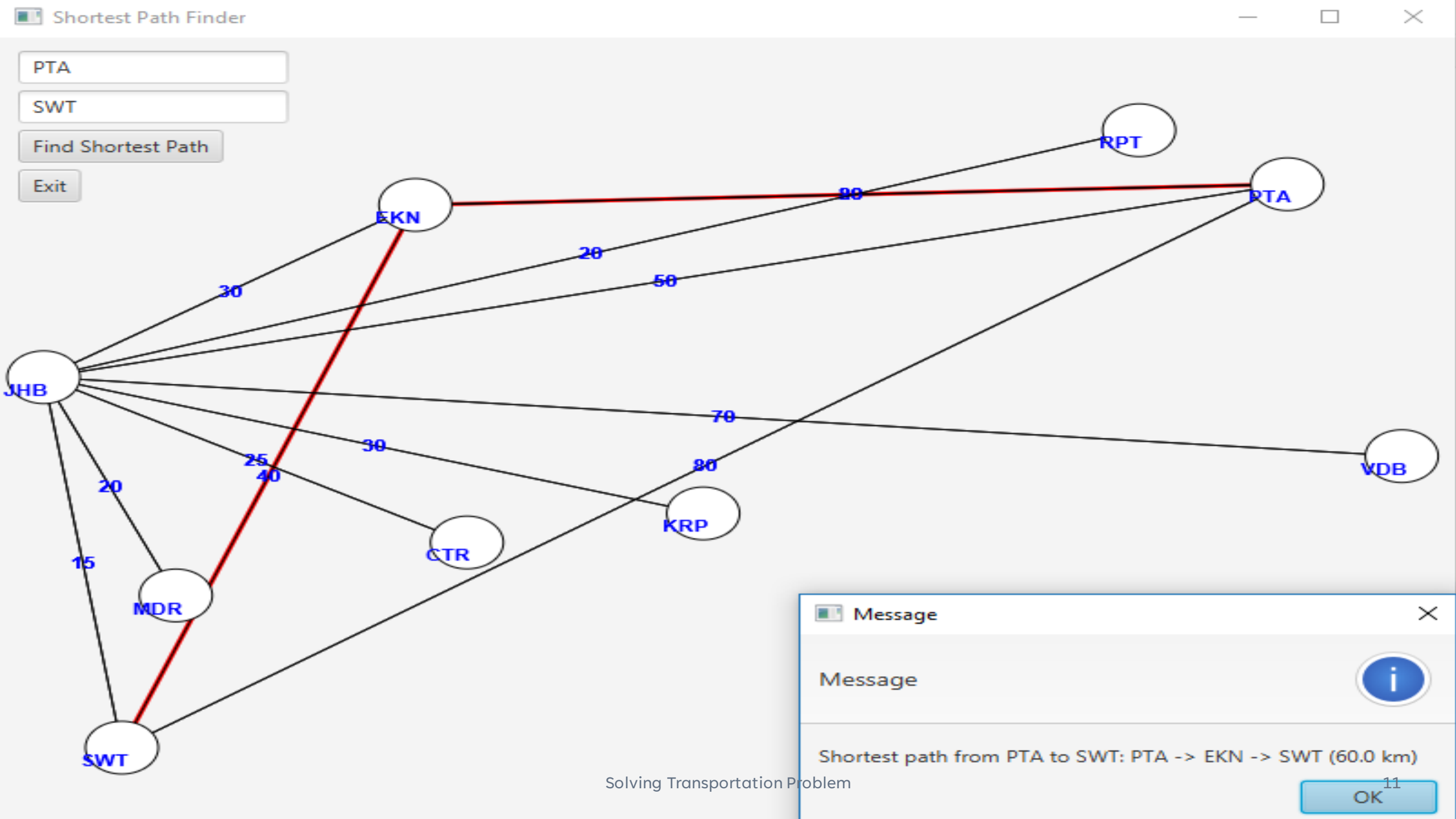

Shortest Path Finder
PTA
SWT
Find Shortest Path
Exit
RPT
PTA
EKN
JHB
VDB
KRP
CTR
MDR
SWT
80
20
50
30
70
30
25
40
80
20
15


Shortest Path Finder
PTA
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JHB
VDB
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CTR
MDR
SWT
80
20
50
30
70
30
25
40
80
20
15
Message
Message
Shortest path from PTA to SWT: PTA -> EKN -> SWT (60.0 km)
OK

Thank you

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